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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,391	08/04/2006	Shahram Mihan	LU 6160 (US)	8380

24114 7590 01/08/2010  
LyondellBasell Industries  
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EXAMINER
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DARJI, PRITESH D

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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01/08/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,391	<b>Applicant(s)</b> MIHAN ET AL.	
	<b>Examiner</b> PRITESH DARJI	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-15 and 18-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-15 and 18-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Appeal Brief***

In view of the Appeal Brief filed on 9/28/2009, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 7-9, 12, 18-19 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth'898 in view of Fottinger (US 2002/0095014)

Regarding claims 1, 7 and 18, Derleth teaches the hydrogel obtained by any suitable known means. See column 2, lines 27-28. The suspension is obtained by grinding the hydrogel in the presence of water. See column 2, lines 42-45. Grinding the hydrogel step shows milling of hydrogel. The grinding of hydrogel will make particulate hydrogel. To produce particulate hydrogel slurry, Derleth teaches the quantity of water added is equal to at least 5% of the weight of hydrogel. See column 2, lines 52-55. In addition Derleth teaches use of steam under conditions controlled to prevent complete drying of atomization of hydrogel particulate slurry. See column 2, lines 63-65.

Furthermore, the reference suggests chromium is contained in catalysts for used polymerization. See column 4, lines 57-60. Regarding size of hydrogel, Derleth teaches that controlled grinding is used to obtain hydrogel size less than 50 micrometers (e.g. between 5 and 50 micrometers), which overlaps instantly claimed hydrogel particle sizes. Additionally, it is possible to use a chromium compound preferably chosen from the soluble salts, such as oxides, acetate, chloride, sulphate, chromate and bichromate in the aqueous solution. See column 4, lines 65-67 and column 5, lines 1-5. Derleth uses silicon and titanium oxides as catalyst support for the polymerization of alpha-olefins. See column 4, lines 20-23. Derleth teaches that during polymerization drying is carried out in air, for example fluidized bed. See column 3, lines 36-40. Furthermore, use of fluidized bed reactor is stated in example 1. Polymerization of alpha-olefins is

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taking place in presence of chromium containing supported catalyst. See column 1, lines 13-15. Polymerized olefin can be also called fiber of olefin. The chromium compound present in a catalyst is in a proportion preferably from 0.1 to 5% and more particularly from 0.25 to 2% by weight. See column 5, lines 10-13. The chromium compound's weight percent ranges overlaps instantly claimed ranges.

Derleth does not teach particle size of hydrogel less than 3  $\mu\text{m}$ .

Fottinger teaches diameter (size) of silica hydrogel from 1  $\mu\text{m}$  to 10  $\mu\text{m}$ , which overlaps instantly claimed range. See [0027].

It would have been obvious for a person with the ordinary skills in the art at the time of the invention to use process of Derleth using smaller size of hydrogel particles in view of Fottinger to have a positive effect on the diffusion-controlled supply of monomers and cocatalysts to the catalyst and thus also on the polymerization kinetics. See [0027].

Regarding hydrogel particle sizes and weight percent ranges, the reference size and weight percent range that overlap the claimed ranges and considering the claimed ranges as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.C.P.Q.549; *In re Wertheim* 191 USPQ 90 (CCPA 1976).

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Regarding claims 7, any difference imparted by product by process limitations would have been obvious to one having ordinary skill in the art at the time of the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685, *In re Fessmann*, 180 USPQ 324, *In re Spada*, 15 USPQ2d 1655, *In re Fitzgerald*, 205 USPQ 594 and MPEP 2113.

Claims 4, 20 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth and Fottinger in view of Warthen'424.

Derleth and Fottinger do not teach a transition metal is applied to the support for catalysts.

Warthen teaches hydrogel support containing catalyst having metallocene compounds, which includes transition metal component from groups IIIB to Group VIII (e.g. chromium). See column 3, line 40 to column 4, line 19 and example 1.

It would have been obvious for a person with ordinary skill in the art at the time of invention to use Derleth and Fottinger's catalyst including transition metal in view of Warthen because it is obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. See *Ex parte Novak* 16 USPQ2d 2041 and *In re Kerkhoven* 205 USPQ 1069.

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Claims 5, 6, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth et al. in view of Mihan (US 6,469,111).

Derleth and Fottinger do not teach thermal activation in the range from 450° C to 900° C.

However, in a process to polymerize olefins, Mihan teaches calcination of dry catalyst precursor for activation at from 400° C to 1100° C in a fluidized bed reactor. See column 3, lines 40-43. The temperature range taught by Mihan overlaps the temperature range of instantly claimed invention. Calcination used by Mihan is thermal activation. Mihan teaches calcination is carried out in the presence of fluorine compounds as a result of which the catalyst surface is modified with fluorine atoms. See column 3, lines 45-50.

It would have been obvious for a person with ordinary skill in the art at the time of invention to use Derleth and Fottinger's catalyst having the activated temperature range in view of Mihan because using this temperature a catalyst will be thermally activated thus providing predictable result of functioning catalyst for the similar purpose.

Claims 10, 11 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth et al. in view of Hlatky (US 5,153,157).

Derleth and Fottinger do not teach organometallic compound for activation comprises aluminum.

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However, in a process of catalyst system of enhanced productivity, Hlatky teaches alumoxane as an activating compound used to produce variety of polymers (see column 1, lines 45-55).

At the time of invention it would have been obvious to a person of ordinary skill in the art to perform the process of Derleth and Fottinger using alumoxane as activator compound in view of Hlatky. The suggestion or motivation for doing so would have been metallocene-alumoxane possesses high activity and are more versatile than conventional Ziegler-Natta type catalysts and they may be effectively used to produce a variety of polymer products (See column 1, lines 47-55). In view of this, the skilled artisan would have appreciated the concept of using this material to improve catalyst performance.

Claims 13, 14, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth and Fottinger in view of Mihan (US 6,469,111).

Regarding claims 13, 14, 27 and 28, Derleth doesn't teach particle size diameters of catalyst. See column 2, lines 47-53.

Mihan teaches mean particle diameters are from 10 to 200 micrometers, in which particle diameters are similar to the size of the catalyst particles.

Derleth and Mihan do not teach that the particle size is in range of 30 to 350 micrometers. As outlined above, the reference teaches diameter values that overlap the claimed ranges and considering the claimed ranges as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to



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have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.C.P.Q.549; *In re Wertheim* 191 USPQ 90 (CCPA 1976).

Claims 15 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth, Fottinger and Mihan in view of Brant '352.

Derleth, Fottinger and Mihan don't teach particle size range and weight percent of discharged polymer.

However, in a process to polymerize olefin, Brant states polymers particles size is less than 125 micrometers (See column11, lines 17-21). In addition, Brant states level of fines is less than 125 micrometers is less than 10 % (See column11, lines 22-25). In line 18 in column 11, it states that fines are polymer particles.

As outlined above, the reference teaches weight percent of polymers that overlap the claimed ranges and considering the claimed ranges as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.C.P.Q.549; *In re Wertheim* 191 USPQ 90 (CCPA 1976).

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PRITESH DARJI whose telephone number is (571)270-

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5855. The examiner can normally be reached on Monday to Thursday 8:00AM EST to 6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. D./  
Examiner, Art Unit 1793

/Stanley Silverman/  
Supervisory Patent Examiner, Art Unit 1793